

What is claimed is:

1. A digital television receiver comprising:

a control section for generating and outputting control  
5 signals according to a user's command for selecting a channel and  
a main/sub picture;

an analog tuning section for selecting an RF signal of an  
analog channel selected by the user among RF signals received  
through an antenna under the control of the control section, and  
converting the selected RF signal into an IF signal;

an analog/digital (A/D)-combined tuning section for  
selecting an RF signal of an analog or digital channel selected  
by the user among the RF signals received through the antenna  
under the control of the control section;

15 a first analog video processing section for processing the  
IF signal of the analog channel selected by the analog tuning  
section in accordance with the main or sub picture selected by  
the user;

20 a second analog video processing section for processing the  
IF signal of the analog channel selected by the A/D-combined  
tuning section in accordance with the main or sub picture  
selected by the user;

a digital video processing section for processing the IF  
signal of the digital channel selected by the A/D-combined tuning

section in accordance with the main or sub picture selected by the user; and

an IF switching section for being switched under the control of the control section, and selectively outputting the IF signal 5 outputted from the A/D-combined tuning section to either the second analog video processing section or the digital video processing section.

2. The digital television receiver as claimed in claim 1, wherein the second analog video processing section comprises:

10 an analog SAW filter for filtering a desired analog channel band from the IF signal outputted through the IF switching section;

15 an analog IF demodulating section for demodulating the IF signal outputted from the analog SAW filter, and separating the demodulated IF signal into video and audio signals; and

20 a video processing section for processing the video signal in accordance with the main or sub picture selected by the user, and synthesizing the processed video signal with an output of the first analog video processing section to output a synthesized video signal.

3. The digital television receiver as claimed in claim 1, wherein the digital video processing section comprises:

a digital SAW filter for filtering a desired digital channel band from the IF signal outputted through the IF switching section;

5 a digital IF demodulating section for demodulating the IF signal outputted from the digital SAW filter, and outputting a demodulated signal in the form of a bit stream; and

a digital decoder for restoring the original video signal by decoding the bit stream in a reverse order to compression.

4. The digital television receiver as claimed in claim 3, wherein the digital decoder restores the original video signal by performing a variable-length decoding, inverse quantization, inverse discrete cosine transform, and motion compensation with respect to the inputted bit stream.

5. The digital television receiver as claimed in claim 1, wherein the IF switching section comprises:

first and second transistors whose collectors are connected together to receive the IF signal outputted from the A/D-combined tuning section, whose emitters are grounded, and whose bases are connected in common to the control section, the first and second 20 transistors being simultaneously turned on/off according to a logic signal outputted from the control section;

a first diode whose anode is connected to the collector of the first transistor, and whose cathode is connected to a digital SAW filter, the first diode being turned on and outputting the IF

signal outputted from the A/D-combined tuning section to the digital SAW filter if the first transistor is turned off; and

a second diode whose cathode is connected to the collector of the second transistor, and whose anode is connected to an analog SAW filter, the second diode being turned on and outputting the IF signal outputted from the A/D-combined tuning section to the analog SAW filter if the second transistor is turned on.

6. The digital television receiver as claimed in claim 1,  
wherein if the user selects both the main picture and the sub  
picture as the analog channels, the analog tuning section selects  
the RF signal of the analog channel for the main picture and  
converts the selected RF signal into the IF signal, the A/D-  
combined tuning section selects the RF signal of the analog  
channel for the sub picture and converts the selected RF signal  
into the IF signal, and the IF switching section selectively  
outputs the IF signal of the analog channel for the sub picture  
selected by the A/D combined tuning section to the second analog  
video processing section under the control of the control section.

20        7. The digital television receiver as claimed in claim 1,  
wherein if the user selects both the main picture and the sub  
picture as the analog channels, the A/D-combined tuning section  
selects the RF signal of the analog channel for the main picture  
and converts the selected RF signal into the IF signal, the

analog tuning section selects the RF signal of the analog channel for the sub picture and converts the selected RF signal into the IF signal, and the IF switching section selectively outputs the IF signal of the analog channel for the main picture selected by  
5 the A/D combined tuning section to the second analog video processing section under the control of the control section.

8. The digital television receiver as claimed in claim 1,  
wherein if the user selects the main picture and the sub picture  
as the analog channel and the digital channel, respectively, the  
10 analog tuning section selects the RF signal of the analog channel  
for the main picture and converts the selected RF signal into the  
IF signal, the A/D-combined tuning section selects the RF signal  
of the digital channel for the sub picture and converts the  
selected RF signal into the IF signal, and the IF switching  
section selectively outputs the IF signal of the digital channel  
for the sub picture selected by the A/D combined tuning section  
15 to the digital video processing section under the control of the  
control section.

9. The digital television receiver as claimed in claim 1,  
20 wherein if the user selects the main picture and the sub picture  
as the digital channel and the analog channel, respectively, the  
A/D-combined tuning section selects the RF signal of the digital  
channel for the main picture and converts the selected RF signal  
into the IF signal, the analog tuning section selects the RF

· signal of the analog channel for the sub picture and converts the  
· selected RF signal into the IF signal, and the IF switching  
· section selectively outputs the IF signal of the digital channel  
for the main picture selected by the A/D combined tuning section  
5 to the digital video processing section under the control of the  
control section.

10. The digital television receiver as claimed in claim 1,  
wherein if the user selects only the main picture as the analog  
channel, the analog tuning section selects the RF signal of the  
10 analog channel for the main picture and converts the selected RF  
signal into the IF signal under the control of the control  
section.

15. The digital television receiver as claimed in claim 1,  
wherein if the user selects only the main picture as the analog  
channel, the A/D-combined tuning section selects the RF signal of  
the analog channel for the main picture and converts the selected  
RF signal into the IF signal, and the IF switching section  
selectively outputs the IF signal of the analog channel for the  
main picture selected by the A/D combined tuning section to the  
20 second analog video processing section under the control of the  
control section.

25 12. The digital television receiver as claimed in claim 1,  
wherein if the user selects only the main picture as the digital  
channel, the A/D-combined tuning section selects the RF signal of

the digital channel for the main picture and converts the selected RF signal into the IF signal, and the IF switching section selectively outputs the IF signal of the digital channel for the main picture selected by the A/D combined tuning section  
5 to the digital video processing section under the control of the control section.

13. The digital television receiver as claimed in claim 1, further comprising an AGC switching section for detecting gains from outputs of the second analog video processing section and the digital video processing section, respectively, being switched under the control of the control section, and controls a gain of the signal selected by the A/D-combined tuning section.

14. The digital television receiver as claimed in claim 1, further comprising an amplifier for amplifying an output of a digital SAW filter to a predetermined level, and feeding its output back to the digital SAW filter.

15. A digital television receiver comprising:  
a control section for generating and outputting control signals according to a user's command for selecting a channel and  
20 a main/sub picture;

an analog tuning section for selecting an RF signal of an analog channel selected by the user among RF signals received through an antenna under the control of the control section, and converting the selected RF signal into an IF signal;

an analog/digital (A/D)-combined tuning section for selecting an RF signal of an analog or digital channel selected by the user among the RF signals received through the antenna under the control of the control section;

5 a first analog video processing section for processing the IF signal of the analog channel selected by the analog tuning section in accordance with the main or sub picture selected by the user;

10 a second analog video processing section for processing the IF signal of the analog channel selected by the A/D-combined tuning section in accordance with the main or sub picture selected by the user;

15 a digital video processing section for processing the IF signal of the digital channel selected by the A/D-combined tuning section in accordance with the main or sub picture selected by the user;

20 an IF switching section for being switched under the control of the control section, and selectively outputting the IF signal outputted from the A/D-combined tuning section to either the second analog video processing section or the digital video processing section;

an AGC switching section for detecting respective gains from the outputs of the second analog video processing section and the digital video processing section, being switched under the

control of the control section, and controlling a gain of the signal selected by the A/D-combined tuning section; and

a mixer for mixing the outputs of the first and second analog video processing sections and the output of the digital

5 video processing section, and outputting a mixed signal for display.

16. The digital television receiver as claimed in claim 15, further comprising an amplifier for amplifying an output of a digital SAW filter to a predetermined level, and feeding its output back to the digital SAW filter.

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17. The digital television receiver as claimed in claim 15, wherein the IF switching section comprises:

first and second transistors whose collectors are connected together to receive the IF signal outputted from the A/D-combined tuning section, whose emitters are grounded, and whose bases are connected in common to the control section, the first and second transistors being simultaneously turned on/off according to a logic signal outputted from the control section;

20 a first diode whose anode is connected to the collector of the first transistor, and whose cathode is connected to a digital SAW filter, the first diode being turned on and outputting the IF signal outputted from the A/D-combined tuning section to the digital SAW filter if the first transistor is turned off; and

a second diode whose cathode is connected to the collector  
of the second transistor, and whose anode is connected to an  
analog SAW filter, the second diode being turned on and  
outputting the IF signal outputted from the A/D-combined tuning  
5 section to the analog SAW filter if the second transistor is  
turned on.

18. The digital television receiver as claimed in claim 15,  
wherein if the user selects both the main picture and the sub  
picture as the analog channels, the analog tuning section selects  
10 the RF signal of the first analog channel selected by the user  
and converts the selected RF signal into the IF signal, the A/D-  
combined tuning section selects the RF signal of the second  
analog channel selected by the user and converts the selected RF  
signal into the IF signal, and the IF switching section  
selectively outputs the IF signal of the second analog channel  
15 selected by the A/D combined tuning section to the second analog  
video processing section under the control of the control section.

19. The digital television receiver as claimed in claim 1,  
wherein if the user selects the main picture and the sub picture  
20 as the analog channel and the digital channel, respectively, the  
analog tuning section selects the RF signal of the analog channel  
selected by the user and converts the selected RF signal into the  
IF signal, the A/D-combined tuning section selects the RF signal  
of the digital channel selected by the user and converts the

selected RF signal into the IF signal, and the IF switching section selectively outputs the IF signal of the digital channel selected by the A/D combined tuning section to the digital video processing section under the control of the control section.